safety. In addition, freedom from the hurdle processing parameters would allow manufacturers more flexibility to produce the lower salt and/or lower fat cheese-type products containing non-traditional emulsifiers, for which there is a growing market demand, without sacrificing consideration of the safety of the cheese-type product.

[0011] Consequently, because of the safety, regulatory, and manufacturing advantages of high acid or "acidified" food products, an imitation cheese composition which retains the flavor, texture and consistency properties of conventional pasteurized process cheese manufactured using hurdle technology would be particularly desirable. Such an acidified imitation cheese composition would have the benefit of being safer than conventional pasteurized process cheeses preserved by hurdle technology and/or sterilization because the acidic pH is sufficient to retard the growth of microbial pathogens. In addition, processing costs would be less for an acidified imitation cheese composition, as no sterilization would be required, nor would adherence to the hurdle predictive models, thereby reducing utility costs and increasing productivity by eliminating fouling and spoilage resulting from errors in manufacturing.

[0012] In the past, attempts have been made to develop an acidified cheese-type product which could occupy the same market niche as pasteurized process cheese. However, these products fail to adequately mimic the flavor, texture, and consistency of conventional pasteurized process cheeses. Significantly, unlike the savory, cheesy flavors characteristic of conventional pasteurized process cheese, the acidified cheese-type products of the prior art have been characterized by unpleasant, sharp, tart, sour or acidic flavors. As a result, these products have been commercially unacceptable without the addition of flavor-imparting substances, such as tomatoes, onions, peppers, and smoke flavors, to mask the unacceptable tastes.

[0013] U.S. Pat. No. 4,143,175 to Whelan et al. ("Whelan '175") discloses a cheese food product for use in a shelf stable pizza sauce with a moisture of up to 70%, a pH of less than 4.6 and between about 57% and 63% natural cheese. This product would be significantly more expensive to produce due to the high natural cheese content than the present invention.

[0014] U.S. Pat. No. 4,089,981 to Richardson ("Richardson '981") discloses a fibrous simulated food product, wherein the pH is less than 4.6 and is generated with a low volume of acid. However, Richardson '981 discloses an imitation cheese product with moisture of only about 56%, and protein of about 6% and between 10% and 85% cellulose fiber. Unlike the present invention, this type of product would likely not provide the consistency desired for cheese or the additional advantages of lower manufacturing costs based on the use of a high moisture content along with a lower protein content.

[0015] U.S. Pat. No. 4,031,254 to Kasik et al. ("Kasik '254") discloses a dry composition to which water is added to make cheese sauces and similar compositions. Even with the added water, the total moisture content is below 55% and the protein content is high. This does not offer the savings in manufacturing costs by using a higher moisture content and a lower protein content. The high protein content also may create a need for a higher amount of an acidulent in order to lower the pH, which would cause a sour acidic taste, similar to the known prior art.

[0016] U.S. Pat. No. 4,684,533 to Kratochvil ("Kratochvil '533") discloses an imitation cheese product having a protein content of at least 1.5%, but with a pH not below 4.6.

[0017] U.S. Pat. No. 5,009,867 to Kratochvil ("Kratochvil '867") discloses cheese-type products with high natural cheese contents.

[0018] U.S. Pat. No. 4,608,265 to Zwiercan et al. ("Zwiercan '265") and U.S. Pat. No. 4,937,091 to Zallie et al. ("Zallie '091") both disclose an imitation cheese, wherein up to 100% of the caseinate is replaced with starch. This results in a high starch, low protein imitation cheese. However, a high starch imitation cheese product of this type would likely have poor taste and textural characteristics. Additionally, in contrast to the present invention, it appears that this type of product relies on hurdle technology for shelf stability, based on its high solid, low moisture content.

[0019] Consequently, there remains a need in the food industry for an acidified composition useful in the manufacture of imitation cheese, including imitation cheese loaves, logs and balls, grated and shredded imitation cheeses, and imitation cheese wheels, which possesses a flavor, texture, and consistency as good as or superior to conventional pasteurized process cheese, yet, by virtue of its acidic pH, is resistant to microbial growth and less expensive to produce.

BRIEF SUMMARY OF THE INVENTION

[0020] The invention is an imitation cheese composition containing moisture, an acidulent in an amount that causes a pH of the composition to be not greater than 4.6, a hydrocolloid, a cheese-derived component in an amount less than about 15% by weight of the composition, and cheese flavoring, wherein the cheese flavoring is natural or artificial, the composition being sufficiently firm such that it can be at least one of sliced, cut, shredded or grated. In a preferred embodiment, the moisture is present in an amount that is at least 60% by weight of the composition.

[0021] In another aspect of the invention, the moisture is present in an amount that is greater than 70% by weight of the composition. In further aspects, the pH is about 2 to about 4.5, and/or protein is present in an amount less than 1% by weight of the composition.

[0022] The acidulent is preferably present in a total titrateable amount of less than 1.5%, and is more preferably present in a total titrateable amount of less than 0.5%. Also, the acidulent is preferably selected from the group consisting of cultured dextrose, glucono-δ-lactone, phosphoric acid and lactic acid.

[0023] The hydrocolloid is preferably present in an amount of at least 0.01% by weight of the composition. The hydrocolloid is preferably selected from the group consisting of agar, alginate, carrageenan, gelatin, guar gum, locust bean gum, pectin and xanthan gum.

[0024] In another aspect of the invention, a method for preparing an imitation cheese composition, is provided that includes the following steps:

[0025] preparing a composition comprising moisture in an amount greater than about 60% by weight of the composition, a hydrocolloid, a cheese-derived component in an amount less than about 15% by